



2 Greenwich Rd Greenwich
Mixed Use Development

OPERATIONAL WASTE MANAGEMENT PLAN

15/07/2020
Report No. SO478
Revision F

Client

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SCOPE

This waste management plan (WMP) only applies to the **operational** phase of the proposed development; therefore the requirements outlined in this WMP must be implemented during the operational phase of the site and may be subject to review upon further expansion for, and/or changes to the development.

The waste management of the **construction** and **demolition** phases of the development are not addressed in this report. It is EFRS's understanding that a construction and demolition WMP will be completed by a separate party appointed by the developer, and submitted separately to this report. Typically, the head contractor of the site will be responsible for removing all construction-related waste offsite in a manner that meets all authority requirements.

REVISION REFERENCE

Revision	Date	Prepared by	Reviewed by	Description	Signed
A	3/03/2020	H Wilkes	A Armstrong	Draft	
B	9/03/2020	H Wilkes	A Armstrong	Amendment	
C	6/04/2020	H Wilkes	A Armstrong	Amendment	
D	30/04/2020	H Wilkes	A Armstrong	Final	
E	15/07/2020	H Wilkes	A Armstrong	Amendment	
F	15/07/2020	H Wilkes	A Armstrong	Amendment	

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GLOSSARY OF TERMS

TERM	DESCRIPTION
<i>Baler</i>	A device that compresses waste into a mould to form bales which may be self-supporting or retained in shape by strapping
<i>Chute</i>	A ventilated, vertical pipe passing from floor to floor of a building with openings as required to connect with hoppers and normally terminating at its lower end at the roof of the central waste room(s)
<i>Chute Discharge</i>	The point at which refuse exits from the refuse chute
<i>Chute Discharge Room</i>	A secure, enclosed area or room housing the discharge and associated equipment for the refuse chute
<i>Collection Area/Point</i>	The identified position or area where garbage or recyclables are actually loaded onto the collection vehicle
<i>Compactor</i>	A machine for compressing waste into disposable or reusable containers
<i>Composter</i>	A container/machine used for composting specific food scraps
<i>Crate</i>	A plastic box used for the collection of recyclable materials
<i>Garbage</i>	All domestic waste (Except recyclables and green waste)
<i>Green Waste</i>	All vegetated organic material such as small branches, leaves and grass clippings, tree and shrub pruning, plants and flowers
<i>Hopper</i>	A fitting into which waste is placed and from which it passes into a chute or directly into a waste container. It consists of a fixed frame and hood unit (the frame) and a hinged or pivoted combined door and receiving unit
<i>L</i>	Litre(s)
<i>Liquid Waste</i>	Non-hazardous liquid waste generated by commercial premises that is supposed to be connected to sewer or collected for treatment and disposal by a liquid waste contractor (including grease trap waste)
<i>LRV</i>	Large rigid vehicle described by AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities as heavy rigid vehicle (HRV)
<i>Mobile Garbage Bin(s) (MGB)</i>	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 360, 660, 1000 or 1100
<i>MRV</i>	Medium rigid vehicle
<i>Putrescible Waste</i>	Component of the waste stream liable to become putrid. Usually breaks down in a landfill to create landfill gases and leachate. Typically applies to food, animal and organic products.
<i>Recycling</i>	Glass bottles and jars – PET, HDPE and PVC plastics; aluminium aerosol and steel cans; milk and juice cartons; soft drink, milk and shampoo containers; paper, cardboard, junk mail, newspapers and magazines
<i>SRV</i>	Small rigid vehicle as in AS 2890.2-2002 Parking facilities – Off-street commercial vehicle facilities, generally incorporating a body width of 2.33

INTRODUCTION

Elephants Foot Recycling Solutions (EFRS) has been engaged to prepare the following waste management plan for Alceon Group No. 55 Pty Ltd for the operational management of waste generated by the mixed use development located at 2 Greenwich Rd Greenwich.

Waste management strategies and auditing are a requirement for new developments to provide support for the building design, and promote strong sustainability outcomes for the building. It is EFRS's belief that a successful waste management strategy contains three key objectives:

- i. **Promote responsible source separation** to reduce the amount of waste that goes to landfill, by implementing convenient and efficient waste management systems
- ii. **Ensure adequate waste provisions and robust procedures** that will cater for potential changes during the operational phase of the development
- iii. **Compliance** with all relevant council codes, policies, and guidelines.

To achieve these objectives, this WMP identifies the different waste streams likely to be generated during the operational phase of the development. Associated information includes: how the waste will be handled and disposed of, details of bin sizes/quantities and waste rooms, descriptions of the proposed waste management equipment used and information on waste collection points and frequencies.

It is essential that this waste management plan is integrated into the overall management of the building and clearly communicated to all relevant stakeholders.

REPORT CONDITIONS

The purpose of this report is to document a Waste Management Plan (WMP) as part of a development application and is supplied by EFRS with the following limitations:

- Drawings, estimates and information contained in this waste management plan have been prepared by analysing the information, plans and documents supplied by the client, and third parties including Council and government information. The assumptions based on the information contained in the WMP is outside the control of EFRS;
- The figures presented in the report are an estimate only – the actual amount of waste generated will be dependent on the occupancy rate of the building/s and waste generation intensity as well as the building managements approach to educating residents and tenants regarding waste management operations and responsibilities;
- The building manager will make adjustments as required based on actual waste volumes (if waste is greater than estimated) and increase the number of bins and collections accordingly;
- The report will not be used to determine or forecast operational costs or prepare any feasibility study or to document any safety or operational procedures;
- The report has been prepared with all due care however no assurance or representation is made that the WMP reflects the actual outcome and EFRS will not be liable to you for plans or outcomes that are not suitable for your purpose, whether as a result of incorrect or unsuitable information or otherwise;
- EFRS offer no warranty or representation of accuracy or reliability of the WMP unless specifically stated;
- Any manual handling equipment recommended should be provided at the recommendation of the appropriate equipment provider who will assess the correct equipment for supply;
- Design of waste management chute equipment and systems must be approved by the supplier.
- EFRS cannot be held accountable for late changes to the design after the WMP has been submitted to Council.
- EFRS will provide specifications and recommendations on bin access and travel paths within the WMP, however it is the architect's responsibility to ensure the architectural drawings meet these provisions.
- EFRS are not required to provide information on collection vehicle head heights, internal manoeuvring and loading requirements. These variables are considered to be within the applicable Traffic Consultants domain.
- Council are subject to changing waste and recycling policies and requirements at their own discretion.

This WMP has only been finalised once the Draft Watermark has been removed. If the Draft Watermark is present, the information in the WMP is not confirmed.

DEVELOPMENT SUMMARY

The proposed development falls under the LGA of Lane Cove Council, and consists of:

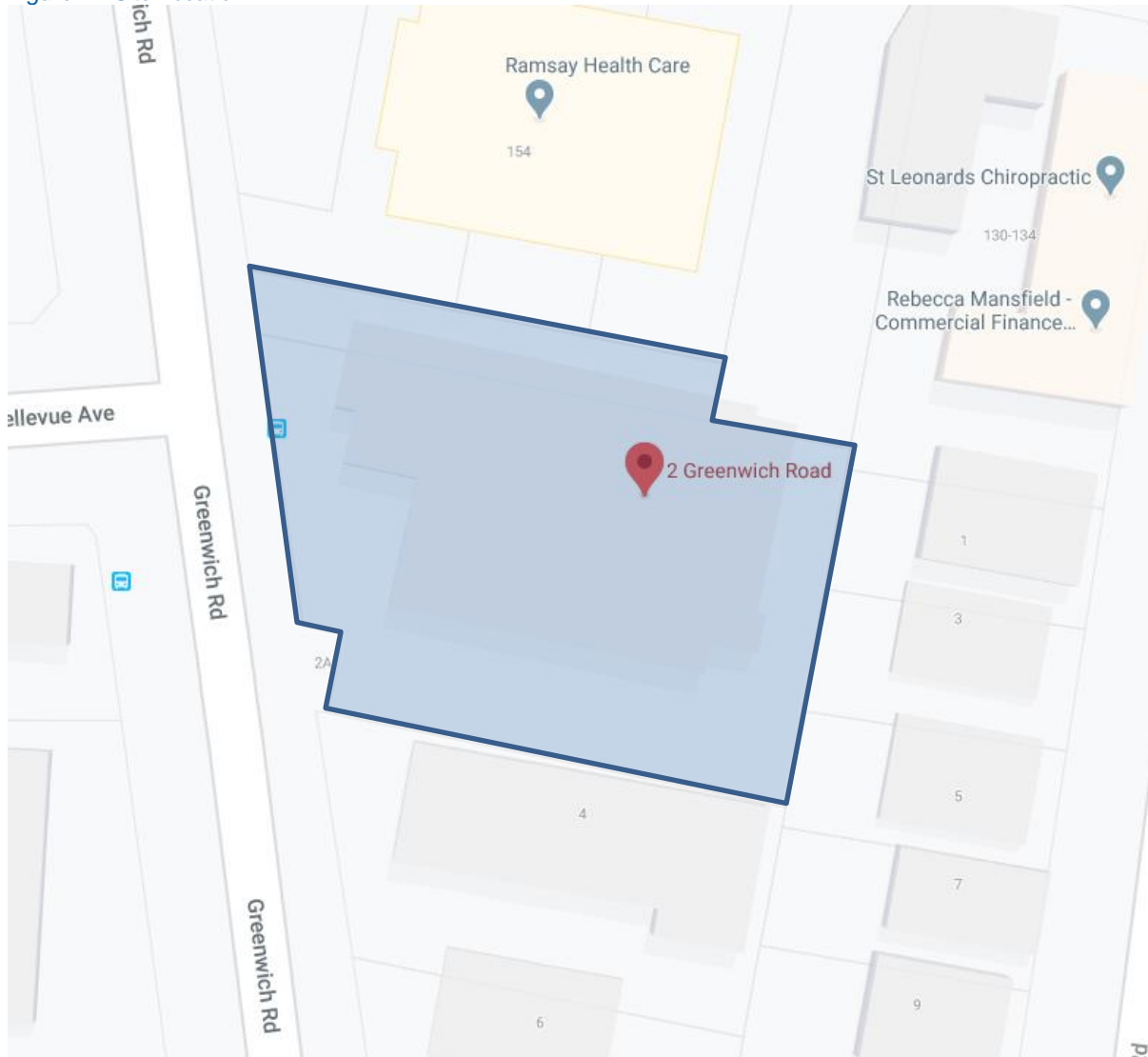
- One building with 8 levels and 3 basement levels
 - 40 seniors living residential units in total
 - 194m² for residential facilities
 - 4 tenancies with a total GFA of 458.9m²

All figures and calculations are based on area schedules as advised by our client and shown on architectural drawings.

SITE LOCATION

The site is located at 2 Greenwich Rd Greenwich, as shown in Figure.1. The site has frontages to Greenwich Rd with vehicle access via Greenwich Rd.

Figure 1 - Site Location



LANE COVE COUNCIL

The garbage and recycling will be guided by the services and acceptance criteria of the Lane Cove Council. All waste facilities and equipment are to be designed and constructed to be in compliance with the Lane Cove Council's *Lane Cove Development Control Plan 2010*, Australian Standards and statutory requirements.

COUNCIL OBJECTIVES

- Ensure appropriate waste storage and collection facilities.
- Maximise source separation and recovery of recyclables.
- Ensure waste management systems are as intuitive for occupants as possible and are readily accessible.
- Ensure appropriate resourcing of waste management systems, including servicing.
- Minimise risk to health and safety associated with handling and disposal of waste and recycled material, and ensure optimum hygiene.
- Minimise adverse environmental impacts associated with waste management.
- Discourage illegal dumping by providing on site storage, and removal services.

COUNCIL REQUIREMENTS

Access – Ensure waste systems are easy to use and collection vehicles are able to access buildings to safely remove waste and recycling;

Safety – Ensure safe practises for storage, handling and collection of waste and recycling;

Pollution Prevention – Prevent stormwater pollution that may occur as a result of poor waste storage and management practises;

Noise Minimisation – Provide acoustic insulation to the waste service facilities or residential units adjacent to or above chutes, waste storage facilities, chute discharge, waste compaction equipment and waste collection vehicle access points;

Ecologically Sustainable Development (ESD) – Promote the principles of ESD through resource recovery and recycling leading to a reduction in the consumption of finite natural resources;

Hygiene – Ensure health and amenity for residents, visitors and workers in the Lane Cove Council

STAKEHOLDER ROLES AND RESPONSIBILITIES

The following table demonstrates the primary roles and responsibilities of the respective stakeholders:

Table 1: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Strata/Management	<ul style="list-style-type: none"> Ensuring that all waste service providers submit monthly reports on all equipment movements and waste quantities/weights; Organising internal waste audits/visual assessments on a regular basis; and Manage any non-compliances/complaints reported through waste audits.
Building Manager or Waste Caretaker	<ul style="list-style-type: none"> Ensuring effective signage, communication and education is provided to occupants, tenants and cleaners; Providing staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities; Ensuring site safety for residents, children, visitors, staff and contractors; Abiding by all relevant OH&S legislation, regulations, and guidelines; Assessing any manual handling risks and prepare a manual handling control plan for waste and bin transfers; Preventing storm water pollution by taking necessary precautions (securing bin rooms, preventing overfilling of bins) General maintenance and cleaning of chute doors on each level; Cleaning and transporting of bins as required; Organising, maintaining and cleaning the general and recycled waste holding area; Organising both garbage and recycled waste pick-ups as required; Organising replacement or maintenance requirements for bins; Organising bulky goods collection when required; and Investigating and ensuring prompt clean-up of illegally dumped waste materials.
Residents and Tenants	<ul style="list-style-type: none"> Dispose of all garbage and recycling in the allocated waste chutes and/or MGBs provided; Ensure adequate separation of garbage and recycling; and Compliance with the provisions of Council and the WMP.
Waste Contractor	<ul style="list-style-type: none"> Provide a reliable and appropriate waste collection service; Provide feedback to building managers/residents in regards to contamination of recyclables; and Work with building managers to customise waste systems where possible.
Gardening/Landscaping Contractor	<ul style="list-style-type: none"> Removal of all garden organic waste generated during gardening maintenance activities for recycling at an offsite location.
Building Contractors	<ul style="list-style-type: none"> Removing all construction related waste offsite in a manner that meets all authority requirements.

EDUCATION

Educational material encouraging correct separation of garbage and recycling items must be provided to each resident by building management to ensure correct use of the waste chute. This should include the correct disposal process for bulky goods (old furniture, large discarded items, etc.), and other appropriate materials (electronic, chemical waste, etc.). It is recommended that the building caretaker provides information in multiple languages to support correct practises and minimise the possibility of chute blockages as well as contamination in the collective waste bins.

It is also recommended that the owners' corporation website contain information for residents to refer to regarding use of the chute. Information should include:

- Directions on using the chute doors;
- Recycling and garbage descriptions (council provides comprehensive information);
- How to dispose of bulky goods and any other items that are not garbage or recycling;
- Residents' obligations to health and safety as well as building management; and
- How to prevent damage or blockages to the chute (example below).

To prevent damage or blockage to rubbish chute DO NOT dispose of any newspapers, umbrellas, bedding, cigarettes, cartons, coat hangers, brooms, mops, large plastic wrappings from furniture, white goods, any sharp objects, hot liquid or ashes, oil, unwrapped vacuum dust, syringes, paint and solvents, car parts, bike parts, chemicals, corrosive and flammable items, soil, timber, bricks or other building materials, furniture, etc. down the chute.

It is expected that leasing arrangements with retail operations contain direction on waste management services and expectations.

SIGNAGE

The building manager is responsible for waste room signage including safety signage (see *APPENDIX A.2*). Appropriate signage must be prominently displayed on doors, walls and above all bins, clearly stating what type of waste or recyclables is to be placed in the bin underneath.

All chute doors on all residential levels will be labelled with signs directing chute operations and use of chute door.

RESIDENTIAL WASTE MANAGEMENT

Lane Cove Council's *Lane Cove Development Control Plan 2010* has been referenced to calculate the total number of bins required for the residential units. Calculations are based on generic figures; waste generation rates may differ according to the residents' waste management practices.

ESTIMATED WASTE VOLUMES AND PROVISIONS

The following table shows the estimated volume (L) of garbage and recycling generated by the residential component of the development.

Table 2: Calculated Waste Generation – Residential

# Units		Garbage Generation Rate (L/unit/week)	Generated Garbage (L/week)	Compacted Garbage 1:1.5 (L/week)
40		80	3200	2133.3
TOTAL	40		3200	2133.3
Collections		Garbage Bin Size (L)		240
		Garbage Bins per Week		8.89
		Garbage Collections per Week		1
		Total Garbage Bins Required		9
Equipment		Number of Waste Bins Per Day		1.27
		Chute Discharge Equipment		Single Waste Chute with Co-mingled Recycling and Cardboard recycling bins on each level

*Note: An additional 240L MGB should be provided for each chute discharge for use during collection periods. These bins are not included in the above figures.

Table 3: Calculated Co-Mingled Recycling Generation – Residential

Level	Units	Recycling Generation Rate (L/unit/week)	Generated Co-Mingled Recycling (L/week)	Co-Mingled Recycling Bins per Week	Co-Mingled Recycling Collection Per Week	Total Co-Mingled Recycling Bins Required
Lower Ground	5	24	120	1	1	1
Ground	0	24	0	0	1	0
Level 1	7	24	168	1	1	1
Level 2	7	24	168	1	1	1
Level 3	6	24	144	1	1	1
Level 4	5	24	120	1	1	1
Level 5	5	24	120	1	1	1
Level 6	5	24	120	1	1	1
TOTAL	40		960	7		7

Table 4: Calculated Paper Product Recycling Generation – Residential

Level	Units	Paper Products Recycling Generation Rate (L/unit/week)	Generated Paper Products Recycling (L/week)	Paper Products Recycling Bins per Week	Paper Products Recycling Collection Per Week	Total Paper Product Recycling Bins Required
Lower Ground	5	24	120	1	1	1
Ground	0	24	0	0	1	0
Level 1	7	24	168	1	1	1
Level 2	7	24	168	1	1	1
Level 3	6	24	144	1	1	1
Level 4	5	24	120	1	1	1
Level 5	5	24	120	1	1	1
Level 6	5	24	120	1	1	1
TOTAL	40		960	7		7

During operation, it is the responsibility of the building manager to monitor the number of bins required for the residential component. Waste and recycling volumes may change according to residents' attitudes to waste disposal and recycling, building occupancy levels or development's management. Any requirements for adjusting the capacity of the waste facilities can be achieved by changing the number of bins, the bin sizes or collection frequencies. Building management will be required to negotiate any changes to bins or collections with the collection service provider.

HOUSEHOLD WASTE

One garbage chute will be installed with access provided on all residential levels. One 240L MGB for co-mingled recycling and one 240L MGB for paper product recycling will be placed on each residential level within a cupboard. The residents will be responsible for walking their waste and recycling to the disposal point and placing waste down the chute and recycling into the appropriate bins.

Garbage chute discharges into 240L MGBs placed on carousel. The Garbage is compacted at a 1: 1.5 ratio at the bottom of the chute. The building manager is responsible for monitoring the fullness of the bins on the carousel and rotating with empty bins as required.

2x 240 recycling bins will be situated in the waste compartment on each residential level for collection of co-mingled and paper product recyclable items. The building manager or cleaner is responsible for monitoring the capacity of recycling bins and exchanging, emptying or storing them in the main bin storage room located when required.

Full and spare bins not in use will be kept in the bin holding room.

COMMON AREAS

The residential common areas including amenities and circulation areas will be supplied with suitably branded waste and recycling bins where considered appropriate. These areas generate minimal waste, however garbage and recycling receptacles should be provided and located in convenient locations.

SOURCE SEPARATION

Waste avoidance, recovery and reuse of discarded materials and responsible management of hazardous waste are all crucial elements of sustainable development. Effective waste management practices in developments significantly improve environmental, social, and economic outcomes on both a local and regional scale, and should be integrated into the waste management processes.

GENERAL WASTE (GARBAGE)

Residents will be supplied with a collection area in each unit to deposit garbage and collect recyclable material suitable for one day's storage. This is typically located generally in the kitchen, under bench or similar alternate area. Residents should wrap or bag their garbage; bagged garbage should not exceed 3kg in weight or 35cm x 35cm x 35cm in dimension.

RECYCLING

Recycling must not be bagged. It is recommended that residents use a crate or dedicated bin for collecting recyclables within the allocated residential space provided to ensure correct separation.

Cardboard furniture boxes or large cardboard containers should not be included in the garbage chute – Cardboard can be placed in the paper product recycling bin located on each residential level.

GREEN WASTE

Green waste is not typically generated from multi-unit dwellings other than from surrounding building landscaped areas and is removed by the designated maintenance contractor. In the event that green waste is produced i.e trimming of indoor or balcony plants then this may be disposed of via coordination with the building caretaker or cleaner. Very small quantities may be disposed of via the general waste stream.

BULKY GOODS

A room or caged area will be made available for the storage of discarded residential bulky items (e.g. whitegoods, furniture, etc.). This room should be located within close proximity of the garbage and recycling bin collection room and must have a minimum doorway width of 1700mm to allow for easy movement of large waste items in and out of the room.

These areas are crucial to prevent residents from illegally dumping bulky waste on the footpath outside Councils scheduled collection times. Regular illegal dumping can attract other dumped waste, generate litter, detract significantly from the quality and appearance of the development and reduce amenity of the street.

Residents will be required to liaise with building management regarding the transportation and disposal of bulky goods. Ideally, bulky waste should be collected on a regular schedule so that the storage area does not become overfull and so that residents know when to place items in there for collection. Councils may arrange for more frequent collections of bulky waste for MUDs, however collection frequencies vary among different local government areas.

Donations to charitable organisations should be encouraged. Clean, sound furniture and household goods etc. are highly sought after to provide for the disadvantaged. Donations can be arranged with the assistance of the building manager/waste caretaker.

E-WASTE

E-waste (electronic waste) refers to any equipment containing printed circuit boards. E-Waste must not be placed in standard garbage or recycling, E-Waste can potentially contaminate soil and surrounding water bodies if not disposed of correctly. The best disposal method for e-waste is recycling through a E-waste service or council.

Disposal or recycling of electronic waste will be organised with the assistance of the building caretaker. Residents and/or the building manager may choose to contact Council to find out about new or existing strategies for the disposal and collection of electronic waste.

CHEMICAL WASTE

Chemical wastes (e.g. cleaning chemicals, paints, oils solvents) pose detrimental effects to human health and the environment if not disposed of correctly. Chemical wastes should be disposed of at a suitable licensed disposal facility. No liquid wastes or wash down waters should be disposed of via the storm water drainage system.

Residents will need to liaise with the building manager when disposing of their chemical wastes. The building manager will be responsible for arranging the correct disposal of chemical waste. Household Chemical CleanOut events are held at various locations throughout NSW on specified dates throughout the year. Locations and dates are subject to change. It is recommended that the building caretaker confirm these details with their local Council.

ORGANIC WASTE AND COMPOSTING

Recycling organic waste, such as food scraps and garden materials, dramatically reduces the quantity of waste being diverted to land fill and thus reduces residents' ecological footprint. Compost material can also be returned to the soil as a rich fertilizer and improve plant growth and the overall health of surrounding vegetation.

It is recommended that a space for composting and worm farming is made available for all residents in a communal facility or in small private courtyards (see *APPENDIX C.1*). Composting facilities are to be sited on an unpaved area with soil depth of at least 300mm. Residents may also choose to purchase and install apartment style compost bin where practical and self-manage these systems (see *APPENDIX C.2 and APPENDIX C.3*).

RETAIL TENANCY WASTE MANAGEMENT

Lane Cove Council's *Lane Cove Development Control Plan 2010* has been referenced to calculate the total number of bins required for the retail areas. Calculations are based on generic figures; waste generation rates may differ according to the tenants' waste management practice.

ESTIMATED WASTE VOLUMES AND PROVISIONS

The following table shows the estimated volume (L) of garbage and recycling generated by the retail component of the development. A seven-day operating week has been assumed. It has also been assumed that the tenancies will share a retail waste room.

Table 5: Calculated Waste and Recycling Generation – Tenancies

Type	NLA (m ²)	Garbage Generation Rate (L/100m ² /day)	Generated Garbage (L/week)	Recycling Generation Rate (L/100m ² /day)	Generated Recycling (L/week)
General Retail - Non-Food Retail	458.9	50	1606.15	50	1606.15
TOTAL	458.9		1606.15		1606.15
Collections & Equipment	Bin Size (L)		660	Bin Size (L)	
	Garbage Bins Per Week		2.43	Recycling Bins Per Week	
	Collections per Week		2	Collections per Week	
	Total Waste Bins Required		2	Total Recycling Bins Required	

It is the responsibility of the building manager to monitor the number of bins required for the development. Waste volumes may change according to the development's management, customer base and retail tenancy attitudes to waste disposal and recycling. The bin numbers and sizes may need to be altered to suit the building operation. Seasonal peak periods i.e. public and school holidays should also be considered.

RETAIL WASTE MANAGEMENT

The retail tenant will be provided with a retail waste room containing 240L MGBs for the collection of waste and recycling.

Tenants will be responsible for their own storage of garbage and recycling back of house (BOH) during daily operations. On completion of each trading day or as required, nominated retail staff or cleaners will transport their garbage and recycling to the Retail Waste Room and place garbage and recycling into the appropriate collection bins.

Cardboard is a major component of the waste generated by retail tenancies. All cardboard should be flattened (to save bin space), placed in and collected from bulk bins. Whilst cardboard is bulky, it is generally lightweight however it can be contaminated with food or liquid which makes it unsuitable for recycling.

To ensure the proper management and disposal of waste, tenants must be made aware of the following practices:

- All garbage should be bagged and garbage bins should be plastic lined;
- Bagging of recyclables is not permitted;
- All interim waste storage is located BOH during operations;
- Individual recycling programs are recommended for retailers to ensure commingled recycling is correctly separated;

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- Any food and beverage tenant will make arrangements for storing used and unused cooking oil in a bunded storage area;
- The operator will organise grease interceptor trap servicing;
- A suitable storage area needs to be provided and effectively bunded for chemicals, pesticides and cleaning products;
- Dry basket arrestors need to be provided to the floor wastes in the food preparation and waste storage areas; and
- All flattened cardboard will be collected and removed to the waste room recycling MGB

WASTE OILS

Consideration should be given to the use of cooking oil collection systems. A single service provider may be used to reduce the amount of commercial traffic into the loading bay or around the precinct area. This should be measured against bulk delivery of oils where the same vehicle is used to remove containers of waste cooking oils (see APPENDIX C.4 for Typical Cooking Oil Collection System)

WASHROOMS

Washroom facilities should be supplied with collection bins for paper towels (if used). Sanitary bins for female restroom facilities must also be arranged with an appropriate contractor.

MANAGEMENT OF SPECIALITY WASTE STREAMS

The building manager is responsible for making arrangements for the disposal and recycling of specialised waste streams with an appropriate contractor. Specialised wastes cannot be placed in general waste as they can have adverse impacts to human health and the environment if disposed of in landfill. Retail tenants will need to liaise with the building manager when disposing of specialised waste streams.

Specialised waste streams include:

- | | |
|--------------------|--------------|
| ○ Chemical Waste | ○ Lightbulbs |
| ○ Liquid wastes | ○ eWaste |
| ○ Toner cartridges | ○ Batteries |

MOVEMENT AND TRANSPORTATION OF BINS

The building manager is responsible for the transportation of bins from their designated operational locations to their respective collection area prior to scheduled collection times and returning them once emptied to resume operational use.

Transfer of waste and all bin movements should minimise manual handling. The building manager must assess manual handling risks and provide any relevant documentation to the key personnel.

If required the developer should contact a bin-tug, trailer or tractor consultant to provide equipment recommendations. Examples of motorised bin moving equipment can be found in APPENDIX A.4 and APPENDIX A.5.

COLLECTION OF WASTE

RESIDENTIAL

Council will be engaged to collect the residential waste and recycling in accordance with Council's collection schedule. This report assumes waste, co-mingled recycling and paper recycling will be collected weekly.

Prior to collection days, the building manager will transport the waste bins from the chute discharge room and recycling bins from each residential level to the bin holding room to await collection. A service bin will remain under the chute while servicing is occurring.

The waste collection vehicle will enter the site from Greenwich Rd and park in the designated loading bay on the Basement level 1. The waste collection staff will collect the bins directly from the bin holding room.

After servicing has been completed, the building manager will be responsible for returning the empty bins to their operational locations.

RETAIL

A private contractor will be engaged to collect the retail waste and recycling to an agreed schedule. This report assumes waste and recycling will be collected twice weekly.

The waste collection vehicle will enter the site from Greenwich Rd and park in the designated loading bay on the Basement Level 1. The waste collection staff will collect the bins directly from the retail waste room.

COLLECTION AREA

It is Elephant Foot's understanding that the collection areas have been reviewed by a traffic consultant to confirm the swept paths, load requirements and clearances for waste collections. It must be ensured that the collection vehicle (and other trucks if required) can enter and exit the building in a forward direction.

EQUIPMENT SUMMARY

Table 6: Equipment Summary

Component	Part	Qty	Notes
Chutes	Please refer to supplier's information	1	(See APPENDIX B for Typical Chute Section)
Equipment A	Garbage 4-bin Carousel suitable for 240L MGBs with compactor	1	(See APPENDIX B.2 for Typical Carousel)
Equipment B	Suitable Bin Moving Equipment	Optional	(See APPENDIX A.4 for Typical Bin Mover)

WASTE ROOM AREAS

In the chute discharge room, Chute discharge requires a minimum of 3000mm distance from floor to ceiling and needs to be free of service pipes and other overhead obstacles within the immediate space around the chute discharge. All waste discharge points should be caged off to ensure the safety of any personnel accessing the waste room. Access to waste discharge with the caged area should be provided to the building manager/waste caretaker only. Under no circumstances should access be provided to any residents, or waste collection staff.

In the retail waste room, all bins should be arranged so that all bin can be accessed without moving any other bins. This is to ensure the safety of staff accessing this room to dispose of waste and recycling.

The areas allocated for waste storage and collection areas are detailed in Table 7 below. The areas provided are estimates only. Final areas will depend upon room and bin layouts.

Table 7: Waste Room Areas

Level	Waste Room Type	Equipment	Estimated Area (m ²)
B1	Chute Discharge & Residential Bin Holding Room (collection area)	<i>Chute discharge – Caged Off</i> 1x 4-bin carousel for 240L MGBs with compactor (waste) 1x 240L MGB (service bin) <i>Bin Holding Area</i> 9x 240L MGBs (Waste) 7x 240L MGBs (Co-Mingled Recycling) 7x 240L MGBs (Cardboard Recycling)	>30
B1	Bulky Goods Waste Storage Room		Minimum 30
B1	Retail Waste Room	2x 660L MGB (waste) 2x 660L MGB (recycling)	>15

CONSTRUCTION REQUIREMENTS

Waste rooms construction must comply with the minimum standards as outlined in the *Lane Cove Development Control Plan 2010* in order to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area.

The *NSW Better practice guide for resource recovery in residential developments* also states that better practice bin storage areas should achieve more than the minimum compliance requirements, which are as follows:

- Ensuring BCA compliance, including ventilation. Where required, ventilation system must comply with *AS1668.4-2012 The use of ventilation and air conditioning in buildings*.
- Ensuring storage areas are well lit (sensor lighting preferred) and have lighting available 24 hours a day.
- Provision of bin washing facilities, including taps for hot and cold water provided through a centralised mixing valve. The taps must be protected from bins and be located where they can be easily accessed even when the area is at bin capacity.
- Floor constructed of concrete at least 75mm thick.
- Floor graded so that any water is directed to a sewer authority approved drainage connection to ensure washing bins and/or waste storage areas do not discharge flow into the stormwater drain.
- Provision of smooth, cleanable and durable floor and wall surfaces that extend up the wall to a height equivalent to any bins held in the area.
- Ensuring ceilings are finished with a smooth-faced non-absorbent material capable of being cleaned.
- All surfaces (walls, ceiling and floors) finished in a light colour.

ADDITIONAL CONSIDERATIONS

- Waste room floor to be sealed with a two pack epoxy;
- All corners coved and sealed 100mm up, this is to eliminate build-up of dirt;
- Tap height and light switch height of 1.6m;
- Storm water access preventatives (grate);
- All walls painted with light colour and washable paint;
- Equipment electric outlets to be installed 1700mm above floor levels;
- The room must be mechanically ventilated;
- Optional automatic odour and pest control system installed
- If 660L or 1100L bins are utilised, 2 x 820mm (minimum) double-doors should be used;
- All personnel doors are hinged, lockable and self-closing;
- Conform to the building code of Australia, Australian standards and local laws; and
- Childproofing and public/operator safety shall be assessed and ensured

VENTILATION

Bin enclosures must have their own exhaust ventilation system either;

- Mechanically - exhausting at a rate of 5L/m² floor area, with a minimum rate of 100L/s minimum; or
- Naturally - permanent, unobstructed, and opening direct to the external air, not less than one-twentieth (1/20) of the floor area

Mechanical exhaust systems shall comply with AS1668 and not cause any inconvenience, noise or odour problem.

USEFUL CONTACTS

Elephants Foot Recycling Solutions does not warrant or make representation for goods or services provided by suppliers.

LANE COVE COUNCIL CUSTOMER SERVICE

Phone: (02) 9911 3555

Email: lccouncil@lanecove.nsw.gov.au

SULO MGB (MGB, Public Place Bins, Tugs and Bin Hitches)

Phone: 1300 364 388

CLOSED LOOP (Organic Dehydrator)=

Phone: 02 9339 9801

ELECTRODRIVE (Bin Mover)

Phone: 1800 333 002

Email: sales@electrodrive.com.au

RUD (Public Place Bins, Recycling Bins)

Phone: 07 3712 8000

Email: Info@rud.com.au

CAPITAL CITY WASTE SERVICES (Private Waste Services Provider)

Phone: 02 9399 9999

REMONDIS (Private Waste Services Provider)

Phone: 13 73 73

SITA ENVIRONMENTAL (Private Waste Services Provider)

Phone: 13 13 35

NATIONAL ASSOCIATION OF CHARITABLE RECYCLING ORGANISATIONS INC. (NACRO)

Phone: 03 9429 9884

Email: information@nacro.org.au

PURIFYING SOLUTIONS (Odour Control)

Phone: 1300 636 877

Email: sales@purifyingsolutions.com.au

MOVEXX (Bin Movers)

Phone: 1300 763 444

AUSCOL (Recycling Oils & Animal Fats)

Phone: 1800 629 476

ELEPHANTS FOOT RECYCLING SOLUTIONS (Chutes, Compactors and eDiverter Systems)

44 – 46 Gibson Avenue

Padstow NSW 2211

Free call: 1800 025 073

Email: info@elephantsfoot.com.au


OPERATIONAL WASTE MANAGEMENT PLAN

APPENDIX B PRIMARY WASTE MANAGEMENT PROVISIONS

APPENDIX A.1 TYPICAL BIN SPECIFICATIONS

The most common bin sizes are provided below, although not all sizes are shown. These dimensions are a guide only and differ slightly between manufacturers.

Average dimension ranges for two-wheel mobile bins




Bin capacity	80L	120L	140L	240L	360L
Height (mm)	870	940	1065	1080	1100
Depth (mm)	530	530	540	735	820
Width (mm)	450	485	500	580	600
Approximate footprint (m ²)	0.24	0.26–0.33	0.27–0.33	0.41–0.43	0.49
Approximate weight (kg)	8.5	9.5	10.4	15.5	23
Approximate maximum load (kg)	32	48	56	96	Not known

Wheelie bin

Sources include Sulo, Single Waste, Cleanaway, SUEZ, just wheelie bins and Perth Waste for two-wheel mobile bins

Average dimension ranges for four-wheel bulk bins




Bin capacity	660L	770L	1100L	1300L	1700L
Height (mm)	1250	1425	1470	1480	1470
Depth (mm)	850	1100	1245	1250	1250
Width (mm)	1370	1370	1370	1770	1770
Approx footprint (m ²)	0.86–1.16	1.51	1.33–1.74	2.21	2.21
Approx weight (kg)	45	Not known	65	Not known	Not known
Approx maximum load (kg)	310	Not known	440	Not known	Not known

Dome or flat lid container

Sources include Sulo, Signal Waste, Cleanaway, SUEZ, Just Wheelie Bins and Perth Waste

Average dimension ranges for bulk bins over 1700L in capacity



Bin capacity	1m ³	1.5m ³	2m ³	3m ³	4.5m ³	6m ³
Height (mm)	1000	910–1250	865–1000	1020–1580	1440–2014	1650
Depth (mm)	1000	905–1000	1300–1400	1470–1700	1605–1900	1900
Width (mm)	1400	1805–2010	1830–2000	1400–2010	1800–2010	2000
Approximate footprint (m ²)	1.4	1.63–2.01	2.4–2.8	2.1–3.4	2.9–3.8	3.8

Bulk bins greater than 1700L

Sources include TORO Waste Equipment, SUEZ, Signal Waste, Perth Waste and ACT Industrial

Source: New South Wales Environmental Protection Authority *Better Practice Guide for Resource Recovery* (2019)

APPENDIX A.2 SIGNAGE FOR WASTE & RECYCLING BINS

Waste Signs

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the EPA (Environmental Protection Authority).

Examples of waste wall posters (EPA supplied)



Examples of bin lid stickers (EPA supplied)



Problem Waste Signs

The EPA has also produced a range of images and signs that can be used for problem wastes, such as fluoro globes and tubes, household and car batteries, e-waste and smoke detectors. To access these resources, contact the NSW EPA. Some examples are shown below.



Safety Signs

The use of safety signs for waste resource recovery rooms must comply with *AS1319 Safety signs for occupational environments*. Safety signs must be used to regulate and control safety related to behaviour, warn of hazards and provide emergency information, including fire protection information. Suitable signs should be decided for each development as required.

Example safety signs

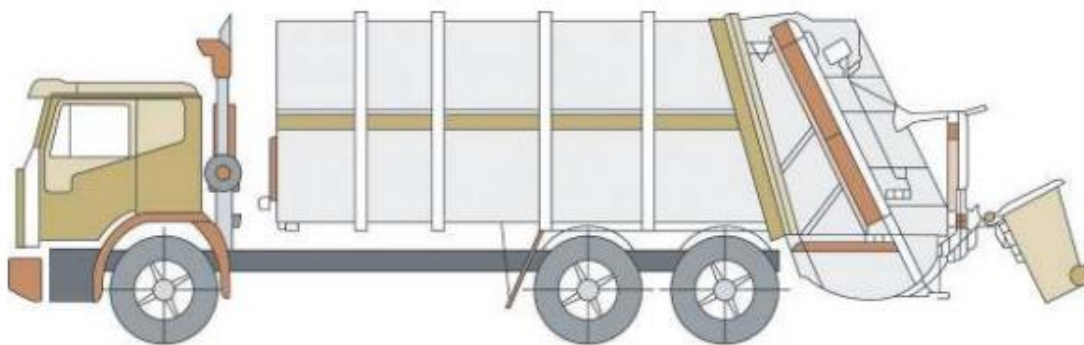


Source: New South Wales Environmental Protection Authority *Better Practice Guide for Resource Recovery* (2019)

APPENDIX A.3 LANE COVE COLLECTION VEHICLE INFORMATION

• Typical Council Garbage Truck used for Domestic Waste Collection – Rear Load

- | | |
|-----------------------------|---------------|
| • Length overall | • 8.0 metres |
| • Width overall | • 2.5 metres |
| • Operational height | • 4.3 metres |
| • Travel height | • 4.3 metres |
| • Weight (vehicle and load) | • 22.5 tonnes |
| • Weight (vehicle only) | • 13 tonnes |
| • Turning Circle | • 25.0 metres |

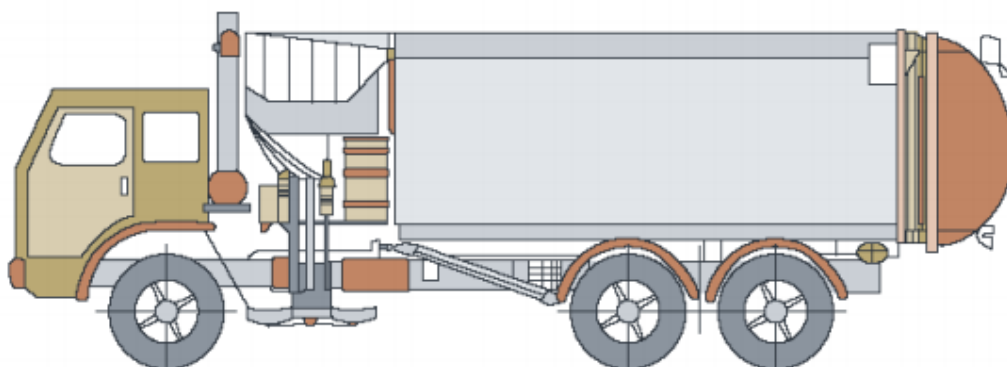


rearloader garbage truck

• **Typical Council Garbage Truck used for Domestic Waste Collection – Side Load**

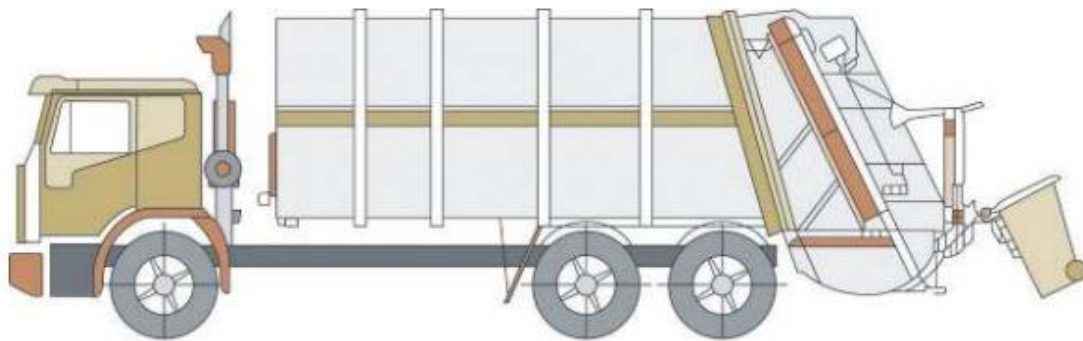
- | | |
|-------------------------------|----------------|
| • Length overall | • 9.64 metres |
| • Width overall | • 1.51 metres |
| • Operational height | • 5.2 metres |
| • Travel height | • 2.93 metres |
| • Weight (vehicle and load) | • 22.5 tonnes |
| • Weight (vehicle only) | • 13 tonnes |
| • Turning Circle kerb to kerb | • 17.86 metres |
| • Turning Circle wall to wall | • 20.56 metres |

Side-loading collection vehicle



• **The Smallest Council Garbage Truck used for Domestic Waste Collection – Rear Load**

- | | |
|-----------------------------|----------------|
| • Length overall | • 6.64 metres |
| • Width overall | • 2.37 metres |
| • Operational height | • 2.40 metres |
| • Travel height | • 2.60 metres |
| • Weight (vehicle and load) | • 7.50 tonnes |
| • Weight (vehicle only) | • 5.48 tonnes |
| • Turning Circle | • 10.70 metres |



rearloader garbage truck

Source: Lane Cove Development Control Plan 2010

APPENDIX A.4 TYPICAL MOTORISED BIN TUG



Typical applications:

- Move trolleys, waste bin trailers and 660/1100L bins up and down a ramp incline.
- Quiet, smooth operation with zero emissions and simple to use, no driver's licence required
- Suitable for:
 - High rise building & apartment basements
 - Large factories & warehouse with sloped ground
 - Caravan parks & other large outdoor areas

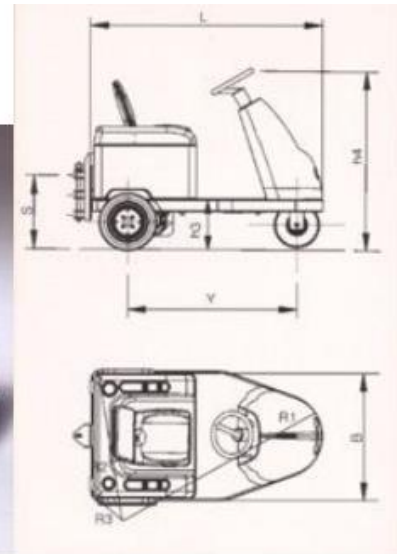
Features:

- 1 tonne tow capacity of inclines up to 8 degrees
- 500kg tow capacity if inclines up to 14 degrees
- CE Compliant
- 4.5 km/h max speed
- 2 x 80amp batteries – includes charger
- Powerful transaxle
- Hitch to suit 660L bins

Safety Features:

- Intuitive paddle lever control
- Stops and repels the unit if activated when reversing.
- Site assessment recommended to assess ramp incline steepness (*See Useful Contacts*)

APPENDIX A.5 TYPICAL SEATED BIN MOVER

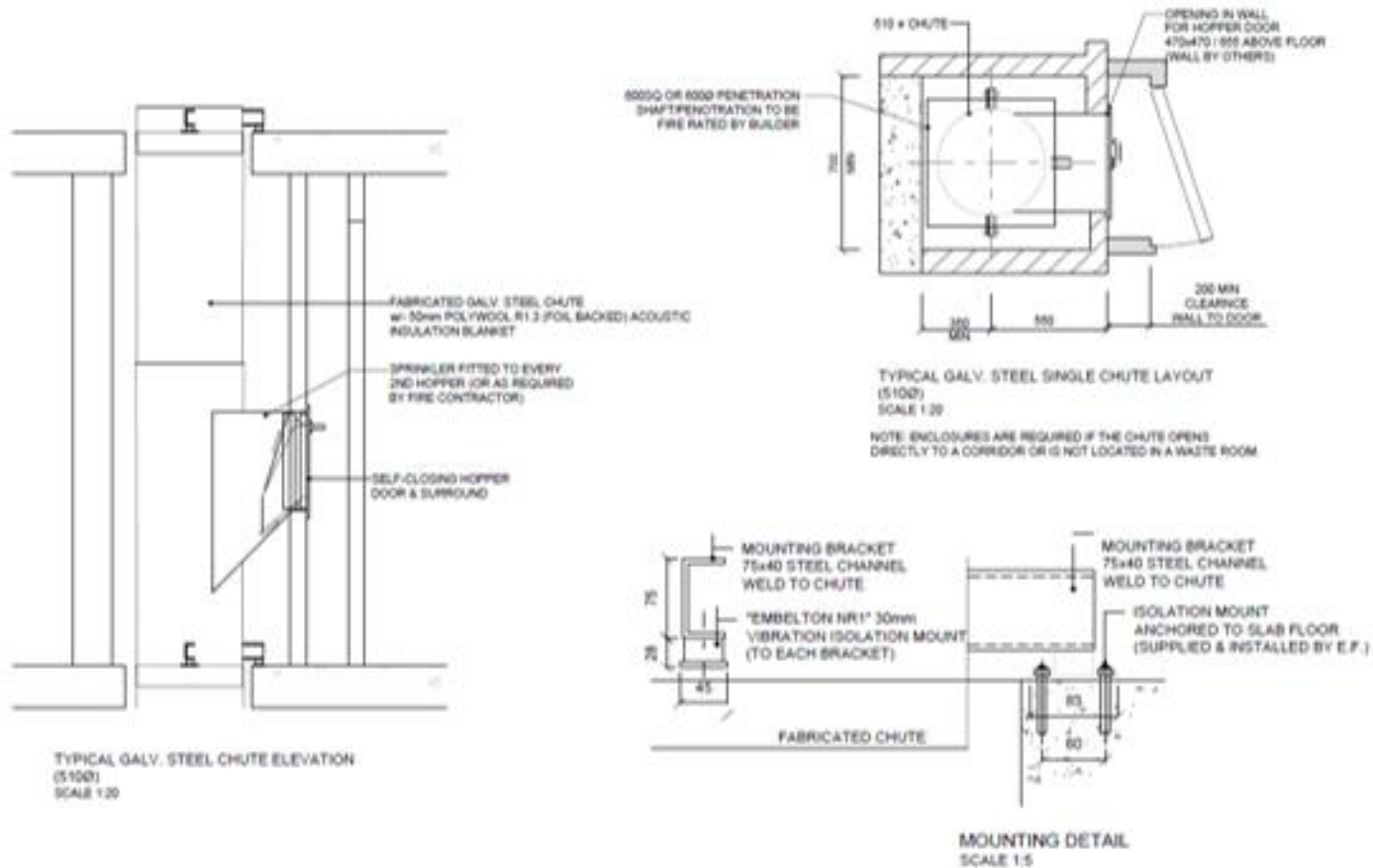


		UNIT M.	BULL 2	BULL 4
Manufacturer	DEC			
Model	BULL			
Platform loading cap.	Nominal capacity	kg	-----	-----
Pull capacity	Pull nominal capacity	kg	2000	4000
Power type	Electric - endothermic		electric	electric
Control type	Standing / seated thiller / steer		seated / steer	seated / steer
Tyres	Pn=pneum. Se=superelastic		Pn	Pn
Wheels	N. front/rear - x drive	n.	1/2X	1/2X
Platform dimensions	L x B (lengh x width)	mm	-----	-----
Platform hight	h6 = unload clearence	mm	-----	-----
Overall dimensions	L = lenght	mm	1500	1600
	B = width	mm	900	930
	h1 = foot leve	mm	1820	1960
	h3 = Seat height	mm	310	340
	h4 = Steer height	mm	1250	1330
Turning radius	R1 = front min. external	mm	1400	1500
	R2 = rear min. external	mm	1000	1000
	R3 = front min. internal	mm	400	400
Aisle width	A = 180° turn	mm	2200	2300
Tow hook height	s = center from ground	mm	220-350-490	240-380-520

OPERATIONAL WASTE MANAGEMENT PLAN

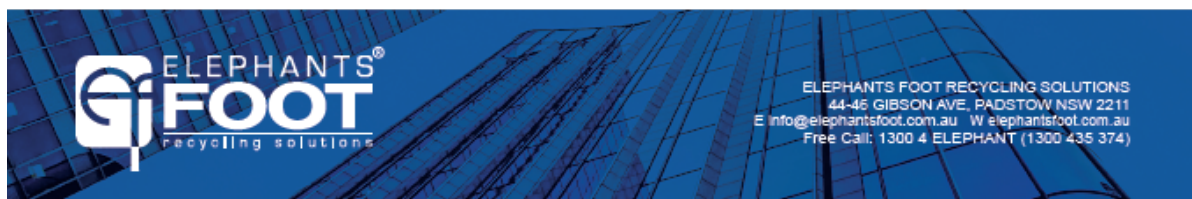
APPENDIX B INSTALLATION EQUIPMENT

APPENDIX B.1 TYPICAL SINGLE WASTE CHUTE SPECIFICATIONS



Please note: this is an example only – please refer to supplier's information and specification.

APPENDIX B.2 CAROUSEL TRACK SYSTEM



240 LITRE CAROUSEL SYSTEM

PRODUCT INFORMATION

Elephants Foot 240 litre bin Carousel System is a versatile waste handling solution for many types of multi-storey or multi-level developments. The Carousel System collects waste or recycling being disposed from the floors above through the chute system, discharging the material via a hopper that feeds the bins positioned on the unit. Electromechanically driven with automated operation, the Carousel System automatically replaces full bins by a revolving circular platform. Once all the bins on the system are filled, an indicator light will illuminate signifying that the bins are ready for withdrawal and collection. Available with or without compaction unit, our standard 240 litre bin Carousel System is available in 4 or 5 bin options.



SPECIFICATIONS

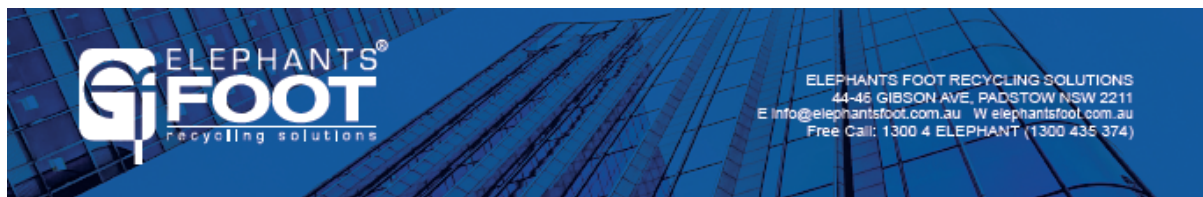
System Control	Electric PLC
Power Supply	415 V AC / 10A / 5 PIN
Motor Size (kW)	0.37
Maximum bin load	96 kg
Noise (dBA)	<85
Bin Size (L)	240
Cycle time (sec)	60
Bin Quantity options	4 or 5

OPTIONAL EXTRAS

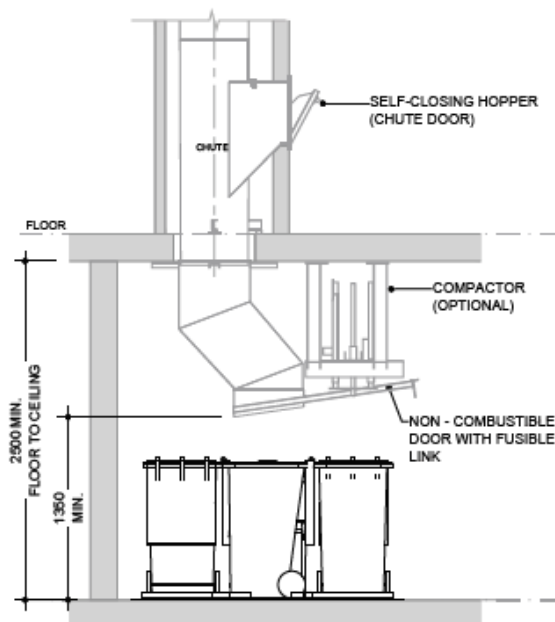
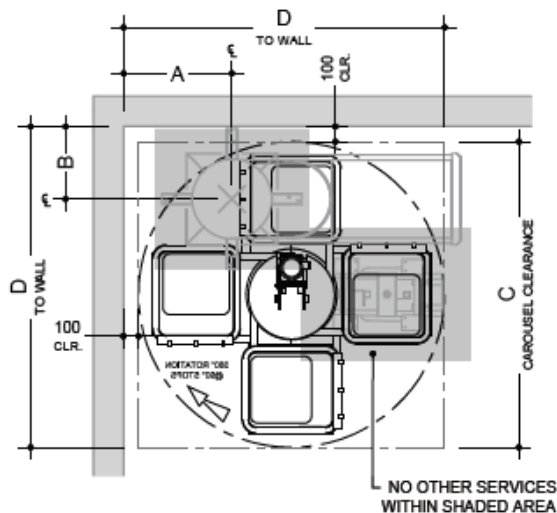
- Compaction unit – Please refer to the bin compactor product information sheet for details and specifications
- Enhanced safety add on's – Interlocking barriers, occupancy sensors or safety light curtains (presence sensing light barriers)
- Full bin SMS and email notification
- CMMS and BMS integration
- Extend warranty – Terms and conditions apply

STANDARD FEATURES & BENEFITS

- Simple operation with user friendly controls
- Increased waste servicing efficiency for the development
- Automatic system control with manual override
- Robust unit construction for long performance life
- Low service and maintain costs
- Rotating flashing beacon (activated during operation)
- Quiet and efficient system operation
- Maximise safety for residents, caretakers and collectors
- Restrained design with minimal moving parts
- Can suit low ceiling clearances
- Floor contact components fully galvanised steel
- Retro fitting options to suit other chutes systems
- Compliant with relevant Building Codes and Standards
- Standard 12 month warranty



CAROUSEL SYSTEM



240 LITRE BIN

240 LITRE BIN CAROUSEL SYSTEM				
No. of Bins	Reference (mm)			
	A	B	C	D
4	750	500	2020	2200
5	900	600	2460	2600

Notes:

Bins not provided by Elephants Foot

Drawings shown are for general information purposes only and provide minimum equipment spatial requirements for waste room design.

These drawings are not intended for site specific use or for construction. Each project is unique and will be designed to suit.

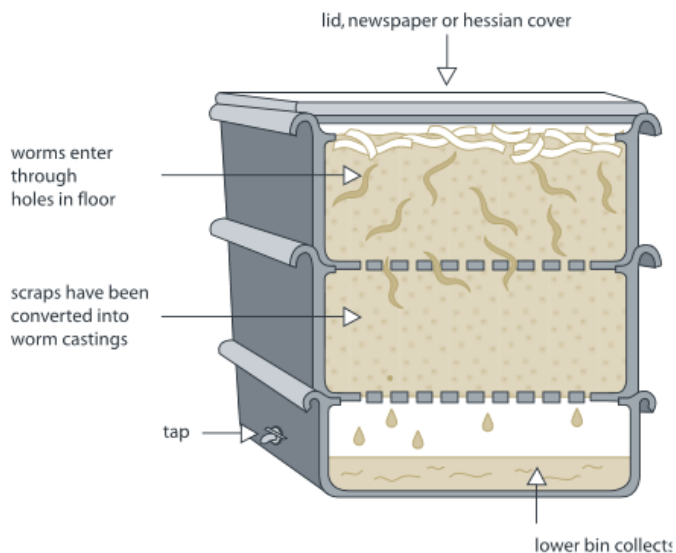
Additional equipment options, systems and configurations are available. For design assessment, information and advice, please contact an Elephants Foot design consultant on 1300 435 374

Please note: this is an example only – please refer to supplier's information and specification.

APPENDIX C SECONDARY WASTE MANAGEMENT PROVISIONS

APPENDIX C.1 TYPICAL WORM FARM SPECIFICATIONS

Worm farms



Space requirements for a typical worm farm for an average household:

Height – 300mm per level

Width – 600mm

Length – 900mm

There are many worm farm arrangements.
The above dimensions are indicative only.

SOURCE: Department of Environment and Climate Change NSW 2008, Better Practice Guide for Waste Management in Multi-Unit Dwellings

APPENDIX C.2 TYPICAL APARTMENT STYLE COMPOST BINS



Apartment Style Compost bin – available from hardware stores

Suitable for:

- Vegetables
- Coffee grounds and filters
- Tea and tea bags
- Crushed eggshells (but not eggs)
- Nutshells
- Houseplants
- Leaves
- Cardboard rolls, cereal
- Boxes, brown paper bags
- Clean paper
- Shredded newspaper
- Fireplace ashes
- Wood chips, sawdust,
- Toothpicks, burnt matches
- Cotton and wool rags
- Dryer and vacuum cleaner lint
- Hair and fur
- Hay and straw

APPENDIX C.3 ELECTRIC ORGANIC COMPOST BIN



Product Specifications

Decomposition Method	Fermentation by microorganisms
Decomposition Capacity	2 metric tonnes per year* (4 kg per day*)
Rating	220–240 V 50/60 Hz – 1.1 A
Decomposition Time	24 hrs
Operating Temperature	0C and 40C.**
Deodorisation Method	Nano-Filter system
Maximum Power	210 W
Power Usage	Average 1 kwh per day
Weight	21 kgs
External Dimensions	w 400 mm d 400 mm h 780 mm


* Food Waste Handling Capacity – based on an optimal operating environment.

** Ambient temperature range of area where unit may be installed.

SOURCE: Closed Loop Domestic Composter – See Useful Contacts

<http://www.closedloop.com.au/domestic-composter>


APPENDIX C.4 TYPICAL COOKING OIL CONTAINERS




A GrainCorp business

[Home](#)
[About](#)
[Services](#)
[Our Parent Company](#)
[Contact](#)

The RIGHT WAY for Cooking Oil Collection Systems




Drums 205L



Pour in Bulk Tank

[View Brochure](#)



Oil Kaddy System

[View Brochure](#)



Collection Service

Collection Systems


Recycling & Environment

Safety

Fresh Oil (WA Only)

Eco Systems



Direct-Connect to Fryer

APPENDIX C.5 TYPICAL BACK OF HOUSE BINS FOR RETAIL OPERATIONS

